



# **Projection of Points**

**GALGOTIAS**  
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- **Basics of Engineering Graphics**
- **Drawing, Sketching**



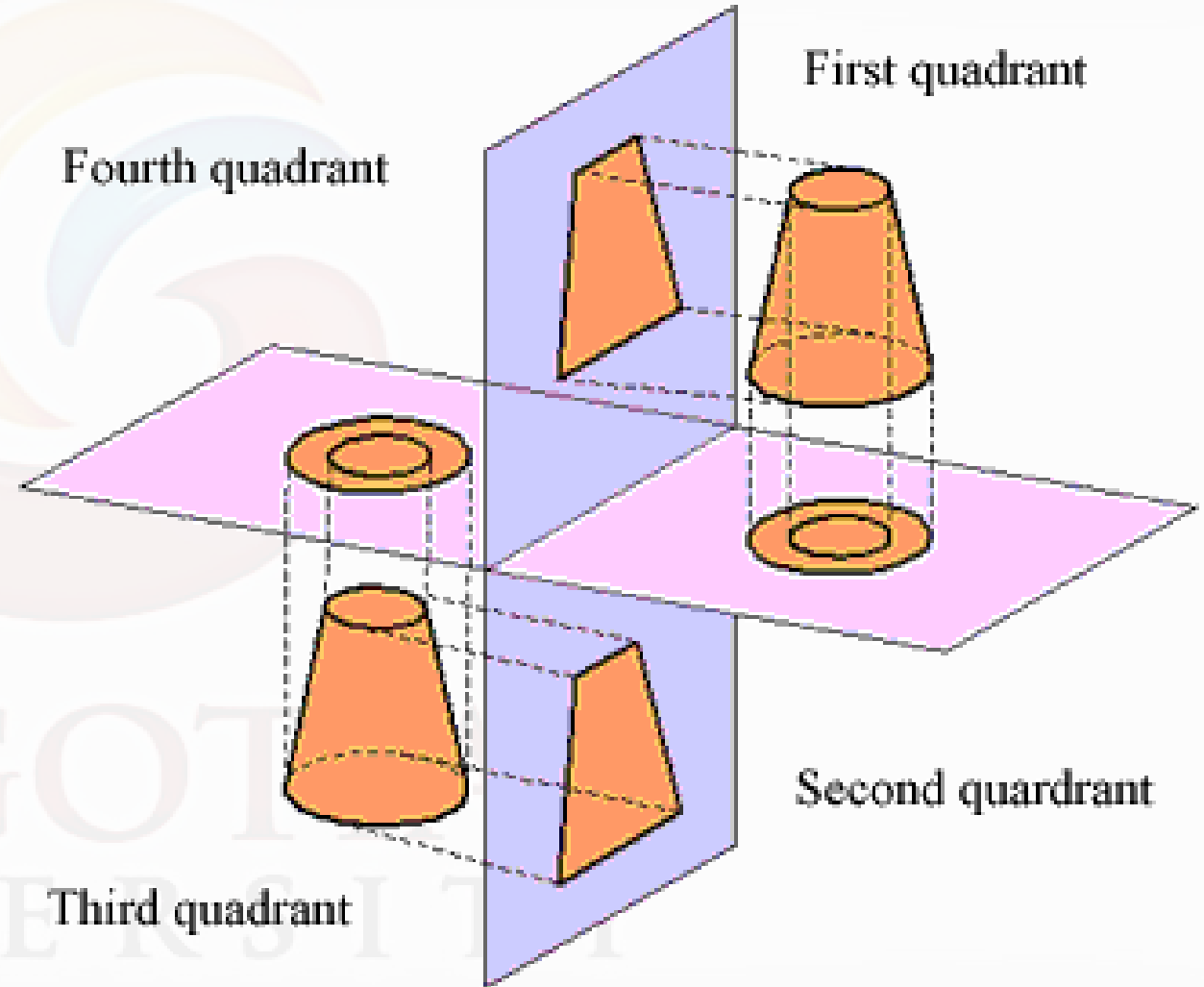
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## To acquire knowledge about:

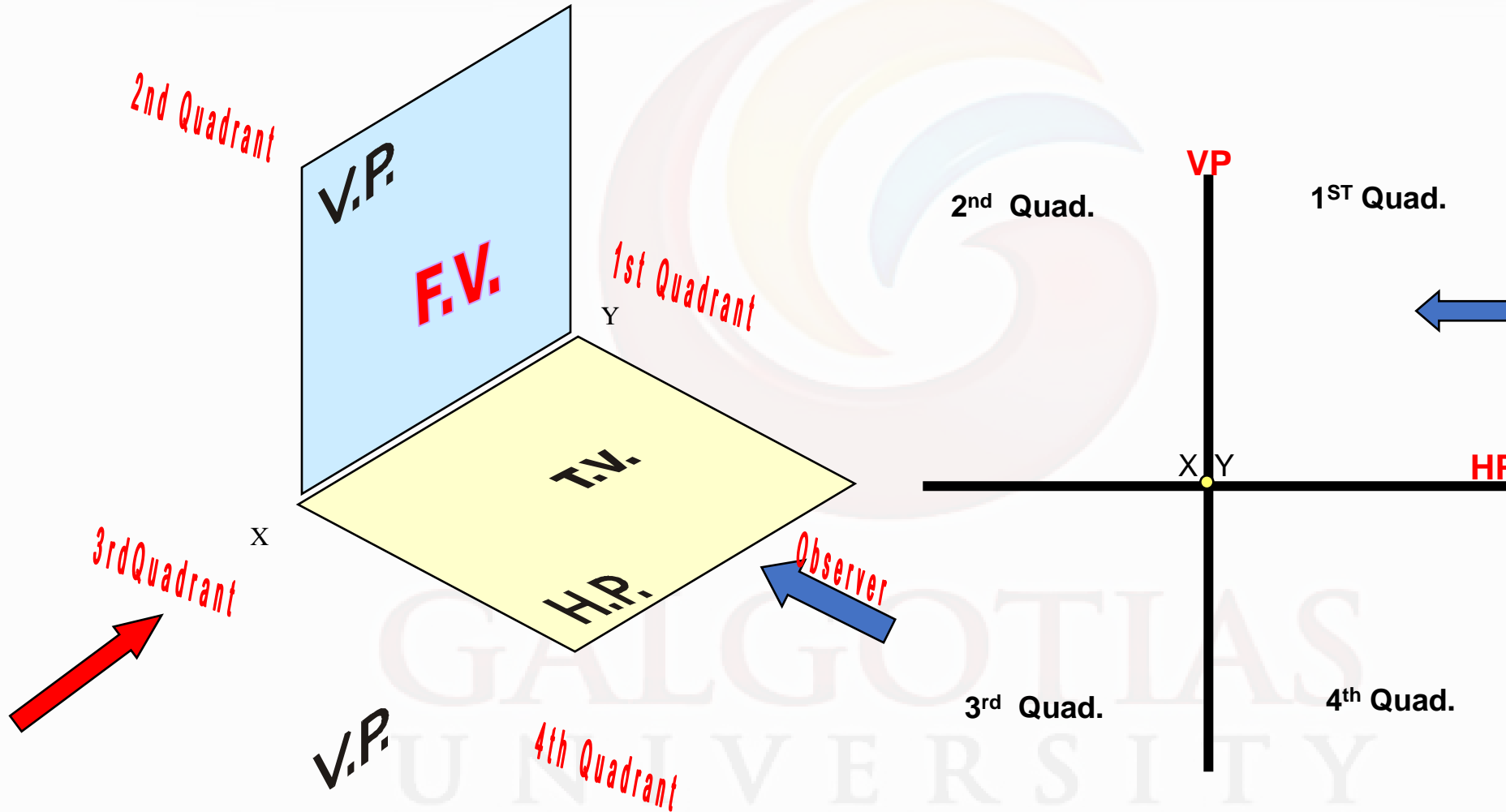
- ☐ Introduction to Projection
- ☐ Different views and Notation
- ☐ Convention used in drawing
- ☐ Point
- ☐ Projection of Point in different plane

# First Angle vs. Third Angle Projection

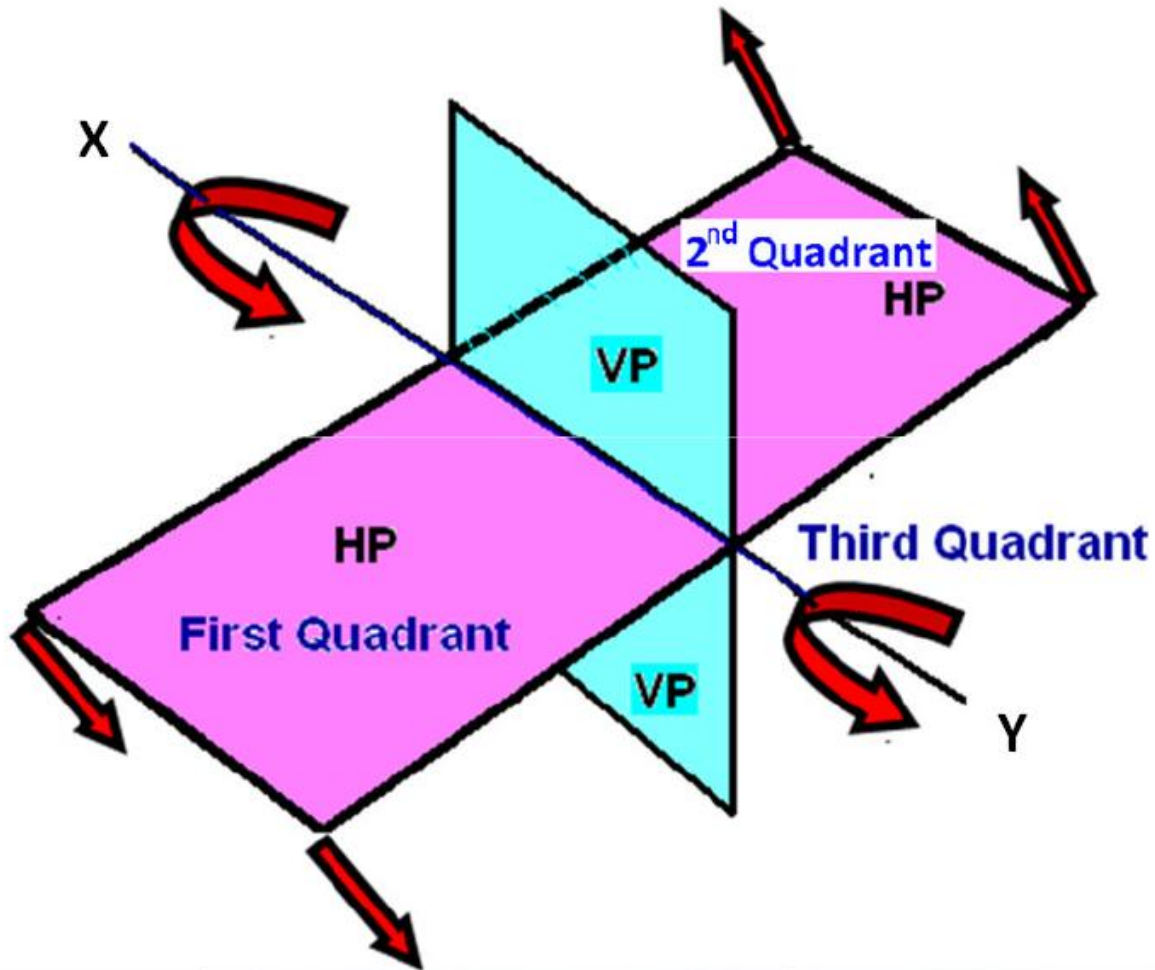
<u>1<sup>ST</sup> ANGLE OF PROJECTION</u>	<u>3<sup>RD</sup> ANGLE OF PROJECTION</u>
<ul style="list-style-type: none"> <li>➤ The object is kept in the 1<sup>st</sup> quadrant.</li> <li>➤ The object lies in between the observer &amp; the Plane of projection</li> <li>➤ The plane of projection is assumed to be Non-transparent</li> <li>➤ In this method, when the views are drawn in their relative position, the plan comes below the FV/elevation or the TV drawn below the FV.</li> <li>➤ The left side view is drawn to the right side of the FV.</li> <li>➤ The right side view is drawn to the left side of the FV.</li> <li>➤ This method of projection is used In European Countries &amp; bureau of Indian standard is adopted w.e.f. 1981.</li> </ul>	<ul style="list-style-type: none"> <li>➤ The object is assumed to keep in 3<sup>rd</sup> quadrant.</li> <li>➤ The plane of projection lies between the observer and the object.</li> <li>➤ The plane of projection is assumed to be transparent</li> <li>➤ In this method, when the views are drawn in their relative position, the plan comes above the elevation or TV is drawn above the FV.</li> <li>➤ The left side view is drawn to the left side of the FV.</li> <li>➤ The right side view is drawn to the right side Of the FV.</li> <li>➤ This method of projection is used In U.S.A &amp; other countries</li> </ul>



# Different Views & Notations



# Direction of rotation of the HP



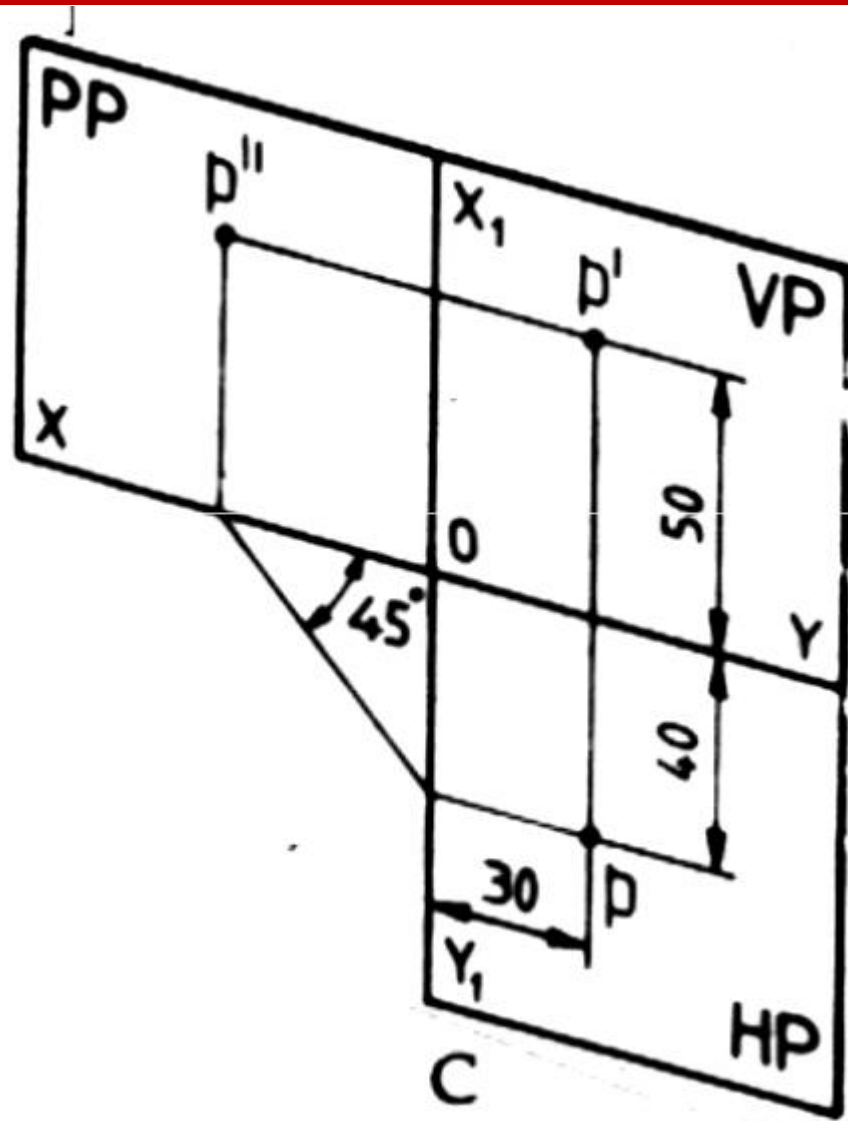
**Convention:**  
**Horizontal plane is always  
rotated clockwise**

# Convention

- Top views are represented by only small letters e.g. *a*
- Their front views are conventionally represented by small letters with dashes e.g. *a'*
- Profile or side views are represented by small letters with double dashes e.g. *a''*

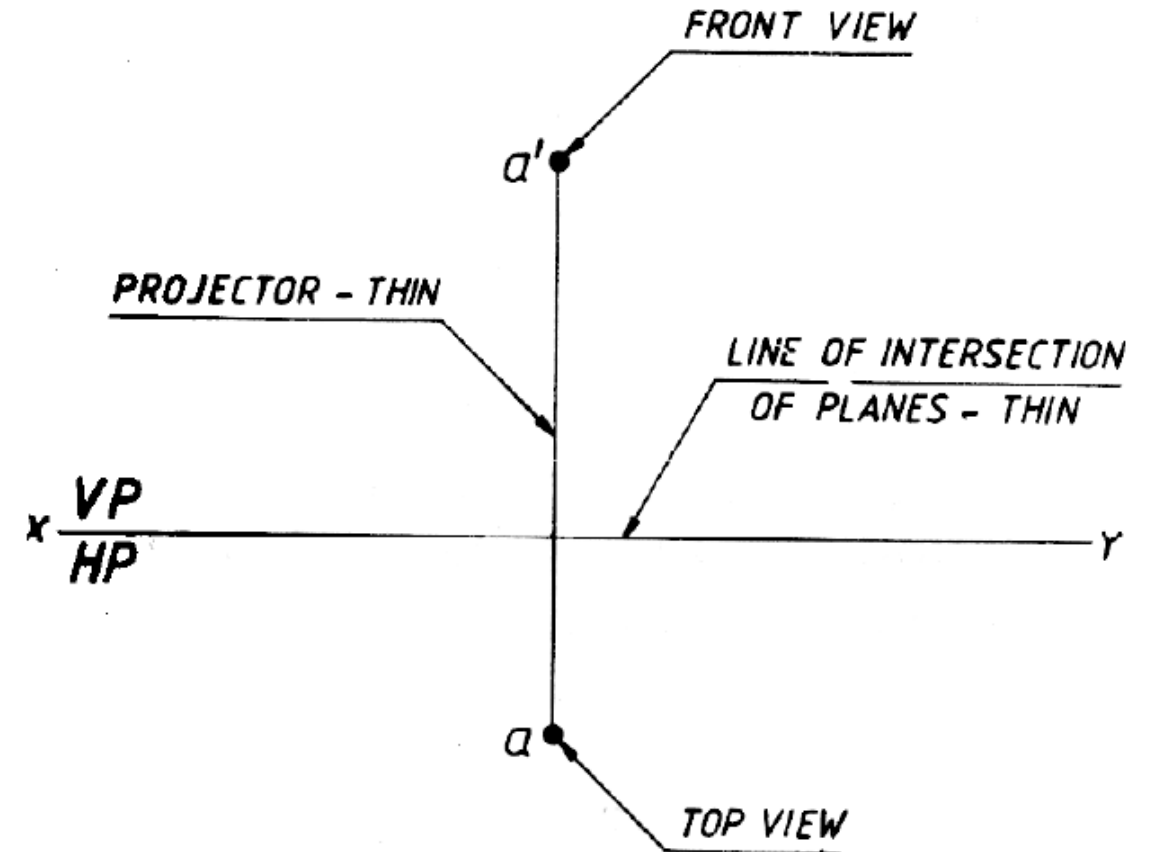
OBJECT	POINT A	LINE AB
IT'S TOP VIEW	a	a b
IT'S FRONT VIEW	a'	a' b'
IT'S SIDE VIEW	a''	a'' b''

- The line of intersection of HP and VP is denoted as XY.
- The line of intersection of VP and PP is denoted as X<sub>1</sub>Y<sub>1</sub>



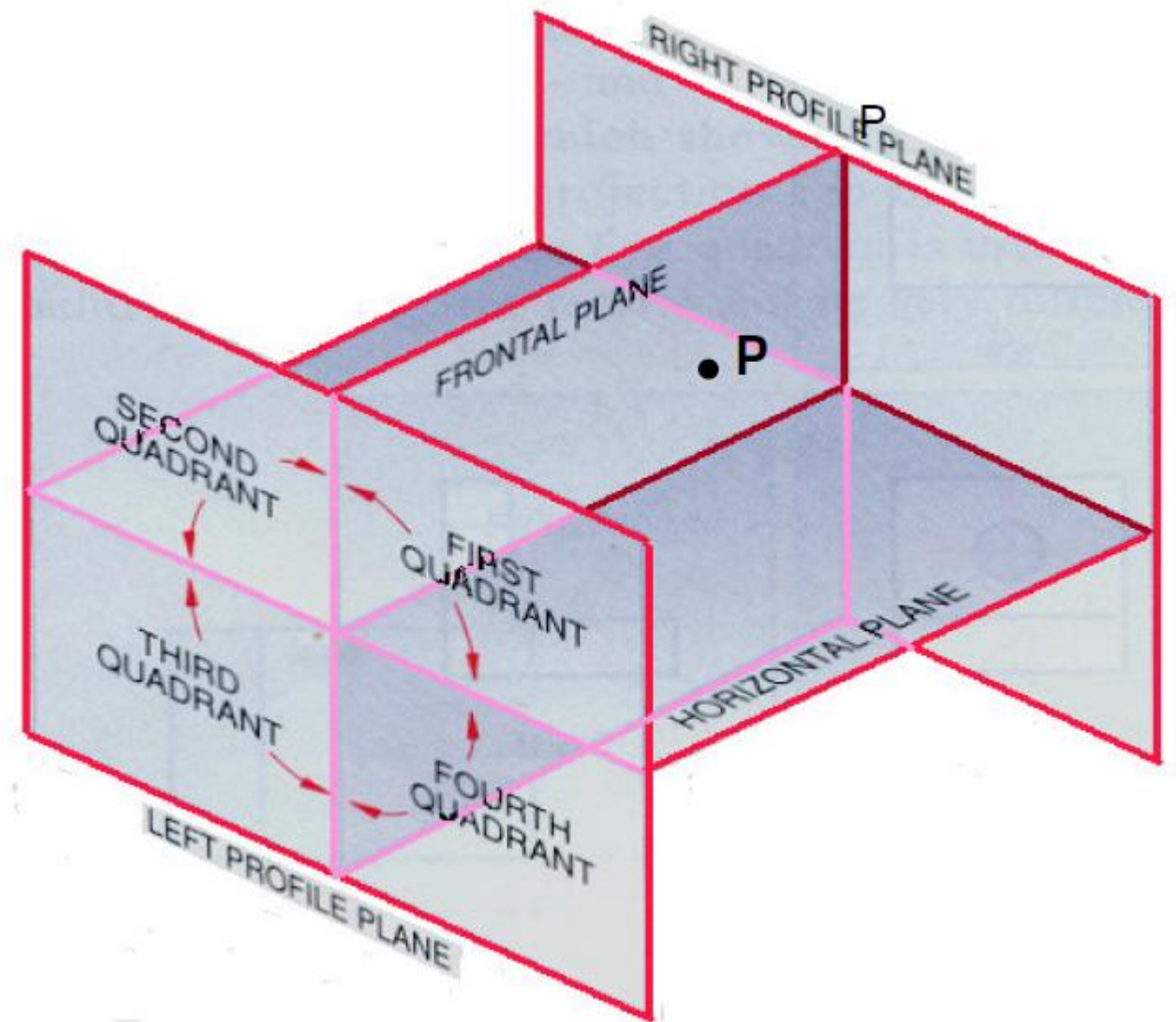


Projectors and the lines of the intersection of planes are shown as thin lines.



# Point

Define its position with respect  
to the coordinates.  
With respect to the VP, HP, & PP



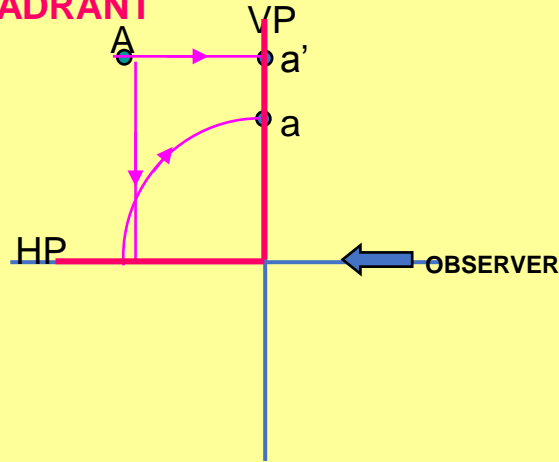
# Projection of a Point

Point A is Placed In different quadrants and it's Fv & Tv are brought in same plane for Observer to see clearly.

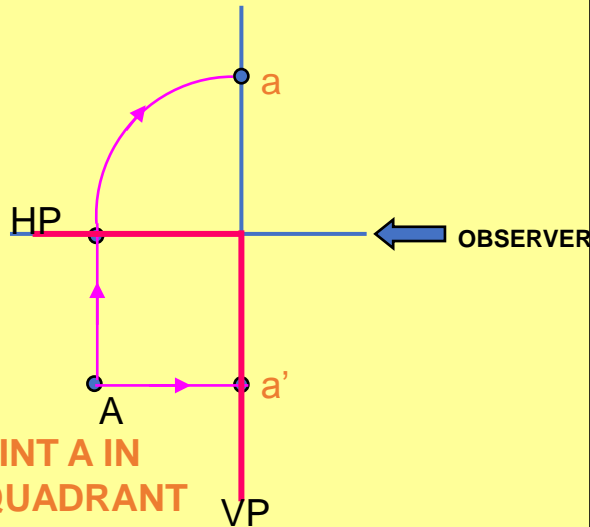
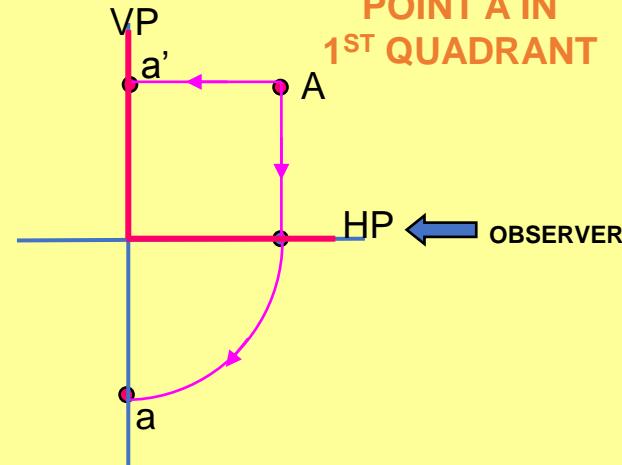
Fv is visible as it is a view on VP. But as Tv is is a view on Hp, it is rotated downward  $90^\circ$ , In clockwise direction. The In front part of Hp comes below xy line and the part behind Vp comes above.

Observe and note the process.

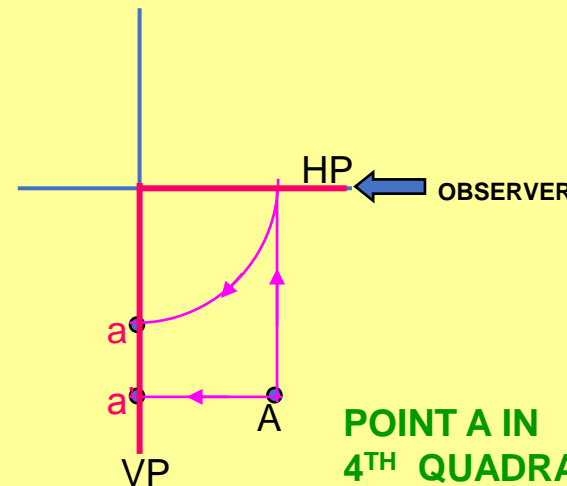
**POINT A IN 2<sup>ND</sup> QUADRANT**



**POINT A IN 1<sup>ST</sup> QUADRANT**



**POINT A IN 3<sup>RD</sup> QUADRANT**

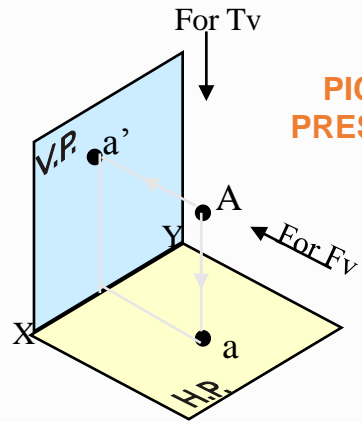


**POINT A IN 4<sup>TH</sup> QUADRANT**

Point in different quadrants

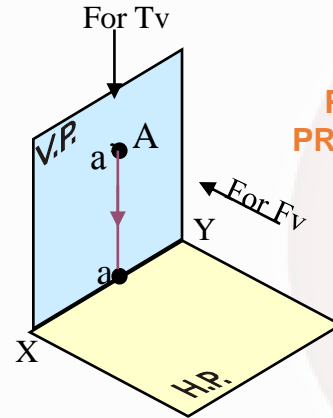
# Projection of a Point in first quadrant

**POINT A ABOVE HP  
& INFRONT OF VP**



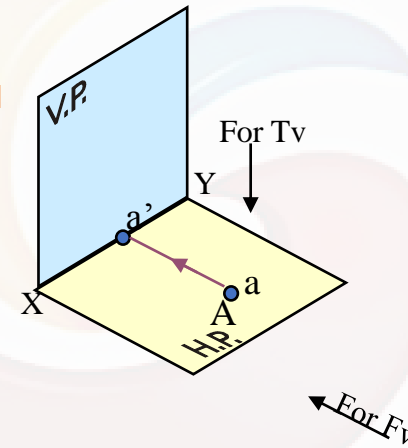
PICTORIAL  
PRESENTATION

**POINT A ABOVE HP  
& IN VP**



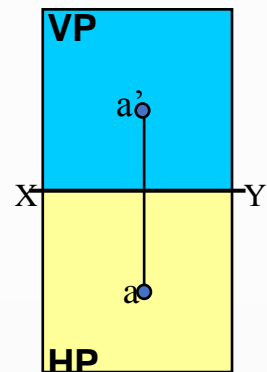
PICTORIAL  
PRESENTATION

**POINT A IN HP  
& INFRONT OF VP**

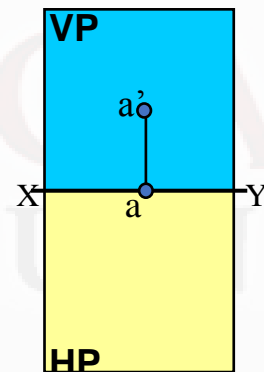


ORTHOGRAPHIC PRESENTATIONS  
OF ALL ABOVE CASES.

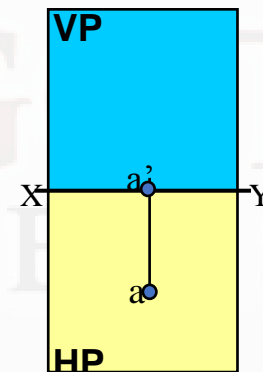
*Fv above xy,  
Tv below xy.*



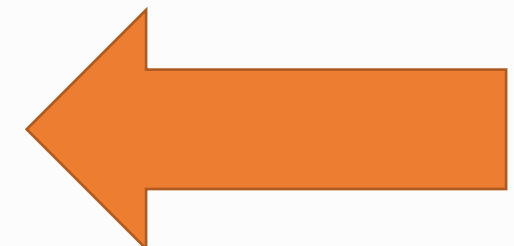
*Fv above xy,  
Tv on xy.*



*Fv on xy,  
Tv below xy.*

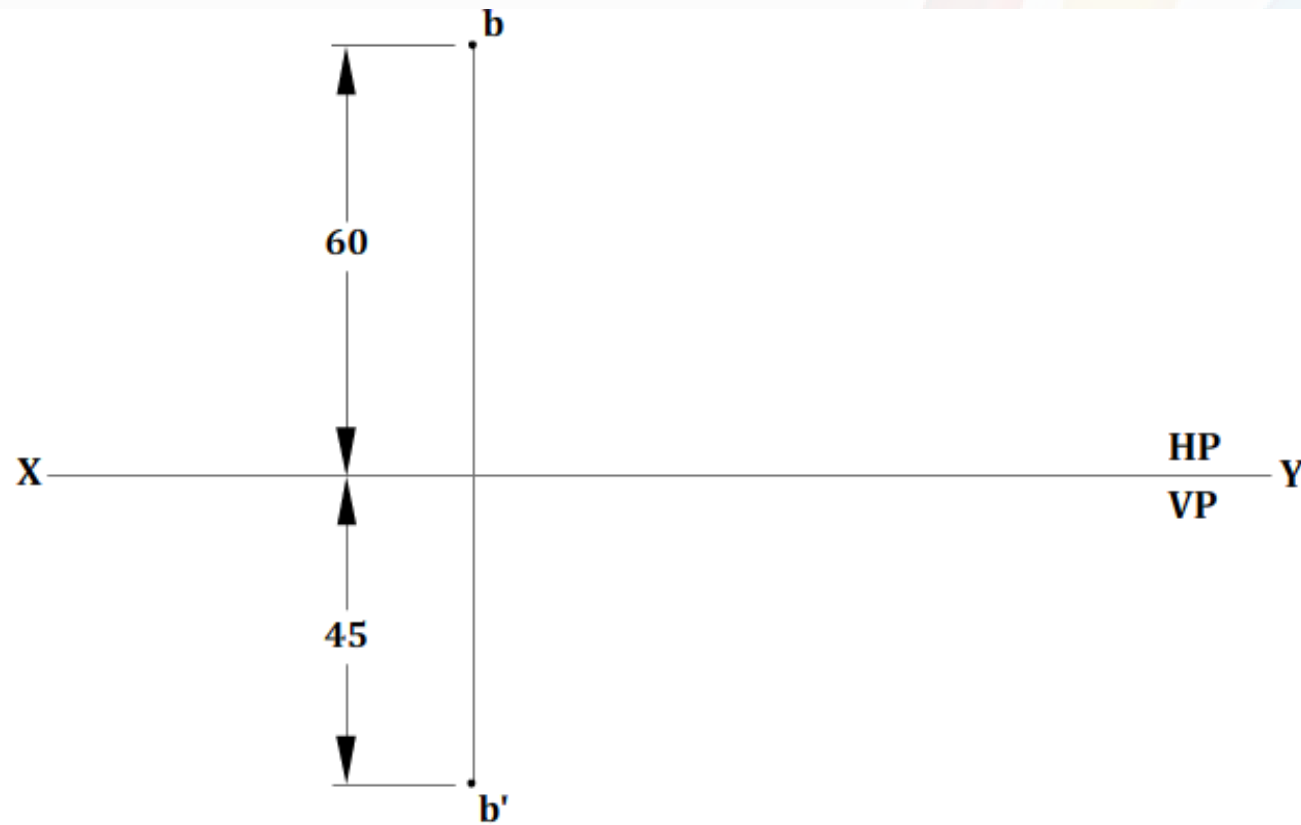


Projection in  
first quadrant



## PROBLEM NO.01:-

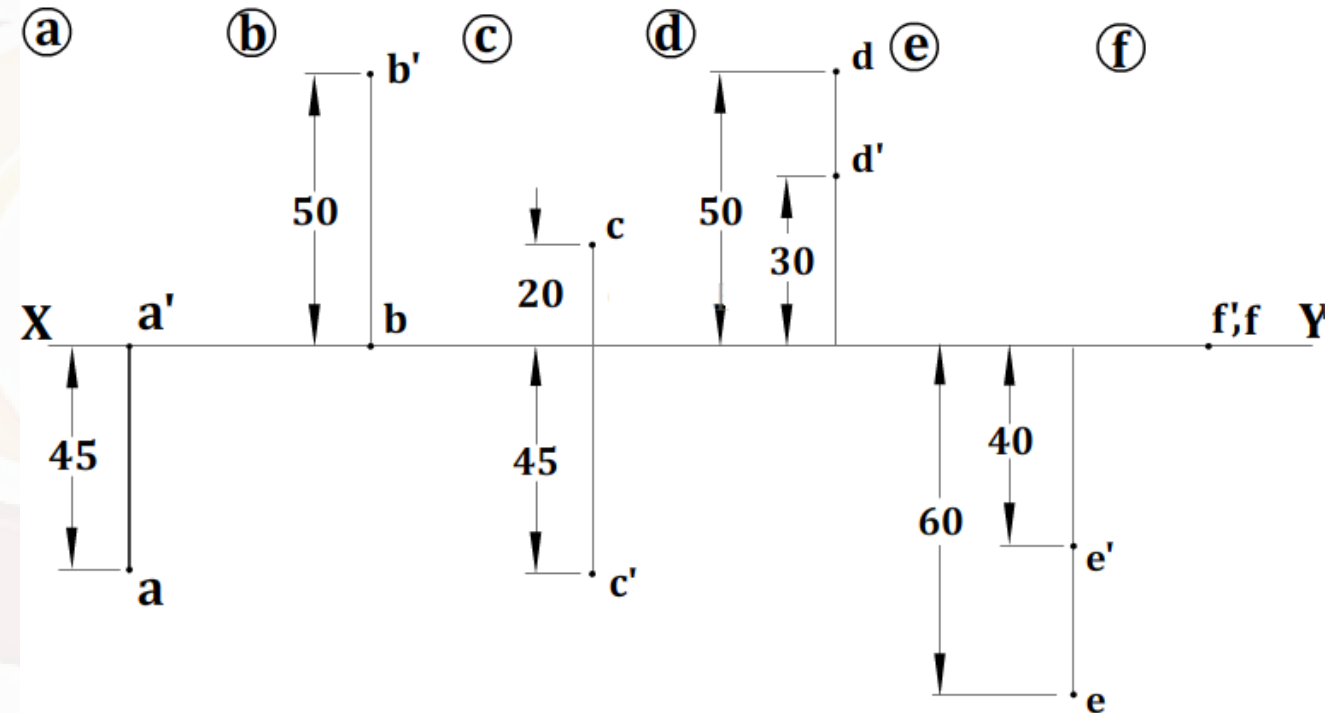
Q.) A point B is 45 mm below HP and 60 mm behind VP. Draw the projections of the point.



## PROBLEM NO.02:-

Q.) Draw the projections of the following points on a common reference line (x y)

- 1) Point A on HP and 45 mm in front of VP.
- 2) Point B in VP and 50 mm above HP.
- 3) Point C 45 mm below HP and 20 mm behind VP.
- 4) Point D 30 mm above HP and 50 mm behind VP.
- 5) Point E 40 mm below HP and 60 mm in front of VP.
- 6) Point F on HP and in VP



A point is defined as a geometrical element that has no dimension. In engineering drawing the point is represented as a very small circle or a dot.

Or, a point represents a location in space or on a drawing & has no width, height or depth.

A point is a simple & simple entity denoted by capital alphabets (A, B, C... Z)

Its front view is denoted by  $a'$

Its top view is denoted by  $a$

- What are the notations used in denoting the projection of point?
- A point A is 20 mm above HP and 30 mm in front of VP. Draw its projections
- A point D is 20 mm below HP and 30 mm in front of VP. Draw its projections.
- Draw the projections of the following points on the same ground line, keeping the distance between projectors equal to 25 mm. (i) Point A, 20 mm above HP, 25 mm behind VP; (ii) Point B, 25 mm below HP, 20 mm behind VP; (iii) Point C, 20 mm below HP, 30 mm in front of VP; (iv) Point D, 20 mm above HP, 25 mm in front of VP; (v) Point E, on HP, 25 mm behind VP; (vi) Point F, on VP, 30 mm above HP



- **Engineering Drawing by N. D. Bhatt and V. M. Panchal**
- **Engineering Graphics by K. C. John**
- **NPTEL**



# Thank You

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